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Vattenfall and ROMO Wind publish performance data verifying that iSpin technology accurately measures wind farm performance

Danish-Swiss wind turbine optimiser ROMO Wind together with Vattenfall carried out a performance measurement project at Nørrekær Enge wind farm in Denmark using 13 Siemens 2.3 MW turbines. The goal was to compare the power curve measurement results of an IEC-compliant met mast, a nacelle LiDAR, and the iSpin spinner anemometer. The results show that only the iSpin technology enables reliable and replicable wind turbine performance measurements on all turbines in the wind farm. Within a confidence interval of 95%, the comparable wind turbines were observed to be operating within only 0.3% of AEP to each other and the power curve verified reference turbine. The raw measurement data is available in an online data sharing portal and interested experts are invited to analyse and confirm all data and results.

The systemic advantage of the iSpin spinner anemometer is that it measures the wind where it first hits the turbine – directly at the spinner. The Nørrekær Enge data now proves that iSpin can be described as the best nacelle-based wind measurement technology and performance measurement method available today:

- The difference between iSpin and met mast AEP measurements was only 0.4%.
- The total variation in AEP among the turbines was within 2.1%
- Removing outliers due to curtailment, yaw misalignment and differing installation, the remaining 9 turbines were operating within only 0.3% of AEP to each other
- The scatter of power curves measured by the spinner anemometer is significantly less than the scatter of the met mast and LiDAR measurements, as the iSpin measurements are undisturbed by terrain effects and wakes from other turbines in the wind farm.

- Using the spinner anemometer, operators can cost-effectively monitor the performance of any turbine in any wind farm at any time.

Anders Sommer, Senior R&D Engineer Wind Power at Vattenfall, says: “We are more than happy with the results and the use of iSpin. We are able to precisely measure the performance of every single wind turbine in the wind farm. The results help us to efficiently optimise the performance of all turbines in a wind farm.”

Jan Nikolaisen, Co-CEO of ROMO Wind, adds: “The current industry standard of using a met mast is too expensive, impractical and imprecise for the industry’s needs. With iSpin we offer a tool that can cheaply and repeatably provide transparency and verification on wind turbine performance and, more importantly, on the performance of a whole wind farm. Better performance measurements will help the entire wind industry. Our data sharing portal, which we have established together with Vattenfall, shows the kind of collaboration we are seeking: we invite all interested specialists to verify or falsify our conclusions.”

iSpin uses ultrasonic technology to measure the wind at the spinner. In this way, accurate information on the wind conditions in front of the rotor can be gathered. This enables operators to measure and monitor the power curves as well as to check whether their turbines are aligned for the best possible yield. At the same time, the data allows for optimised wind farm management and load reduction, which prolongs the total life of the turbines.

The iSpin technology was developed by the Technical University of Denmark (DTU) and has been continuously tested since 2004. iSpin is a wind measurement technology which is not dependent on a specific manufacturer, and is designed for permanent installation.

Data sharing portal: www.romowind.com/open-data

About ROMO Wind:

ROMO Wind AG is a Danish-Swiss technology company supported by renowned investors and shareholders such as Yellow & Blue and ABB. ROMO Wind specialises in optimising the productivity of wind

turbines, accurately measuring on-site wind conditions and reducing turbine loads. The company uses the patented iSpin technology to reach this goal. ROMO Wind has its headquarters in Zug, Switzerland, and has regional teams in Denmark, France, Germany, Great Britain, Ireland, Italy and Spain, as well as a sales cooperation with UpWind Solutions in USA, Canada and Mexico.

Further information about the company and the iSpin technology as well as footage for free editorial use at www.romowind.com

About Vattenfall:

Vattenfall is one of Europe's largest generators of electricity and the largest producer of heat. The Vattenfall Group has slightly more than 30,000 employees. Vattenfall's core markets are Sweden, Germany and the Netherlands. The Group also conducts business in Belgium, Denmark, Finland, Poland and the UK. The parent company, Vattenfall AB, is 100%-owned by the Swedish state. The Vattenfall strategy is to reduce emissions from power generation with a road map to achieving climate neutrality by 2050.

Contact:

Jan Nikolaisen
Co-CEO, ROMO Wind AG
Tel.: +41 78 626 9404
E-mail: jn@romowind.com